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## The Facts About Forced-Air Warming

FACT CHECK  
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## The Importance of Patient Warming

Normothermia's relationship to surgical site infections (SSIs) has garnered special attention in recent years, with numerous evidence-based initiatives, like SCIP-Inf-10, citing normothermia maintenance as a tool in SSI reduction efforts. Maintaining normothermia is one of the easiest, least expensive and most effective benefits you can offer to patients.

An editorial published in *Anesthesia and Analgesia* stated that, "Maintaining normothermia is usually easy... furthermore, the most commonly used warming systems are remarkably safe. There are few, if any, anesthetic interventions that have been proven to so markedly improve the outcome of surgery with so little effort, risk and cost..."<sup>1</sup>

### Choosing the Best Warming Method

Keeping patients warm throughout the perioperative process is integral to providing optimal clinical care and patient comfort. With one simple step, you can make a big difference.

The choice of warming method depends on the type and length of surgery, as not all warming modalities are effective at warming patients throughout the entire perioperative process.

When evaluating a forced-air warming system, it is important to evaluate available clinical research while also considering product-specific features like delivering consistent, even patient warming; ensuring optimized airflow through air channels; and offering useful features like head drapes, tie strips or drainage holes for managing fluids. These attributes can help streamline the surgical experience for clinicians.

<sup>1</sup> Hannenberg, A. Sessler, D. Improving Perioperative Temperature Management (editorial). *Anesthesia & Analgesia*. Nov. 2008; 107(5): 1454-1457.

## 3M™ Bair Hugger™ Therapy and System

The **Bair Hugger system** is the most used and studied method of surgical warming in the country, with its clinical benefits, efficacy and safety well [documented](#) in more than [170 studies](#) and more than 60 randomized controlled clinical trials.

In fact, the Bair Hugger system is the preferred patient warming device of U.S. healthcare facilities (and 8 of the top 10 orthopedic hospitals<sup>1</sup>) and is supported by numerous healthcare organizations because of its proven safety and effectiveness. Bair Hugger therapy is the original forced-air warming system, and has become an indispensable component in the care of surgical patients, providing safe and effective warming therapy to patients across the globe.

<sup>1</sup> U.S. News & World Report, Best Hospitals 2015-16.

## Fact Check: Forced-Air Warming Not Linked to Infection Risk or Disruption in Laminar Airflow

Some manufacturers of conductive warming technologies have suggested that Bair Hugger therapy may increase the risk of wound infection or operating room contamination. In fact, research shows the opposite.

When tested in actual surgical conditions, research shows that forced-air warming does not increase the bacterial count at the surgical site.<sup>2-4</sup> Tests also have demonstrated that airflow from the Bair Hugger system has no significant effect on operating room airflow.<sup>5-6</sup> Additional research has shown there is no disruption of laminar airflow tied to the use of forced-air warmers.<sup>6,7</sup>

### Supporting Resources

[FDA: Keep using warming devices](#)

[ECRI Institute Independent Research Report \(PDF, 139 KB\)](#)

[International Consensus Conference Report \(PDF, 65 KB\)](#)

[Rothman Institute at Thomas Jefferson University: Does forced-air increase SSI risk? \(PDF, 93 KB\)](#)

[Bair Hugger Research Compendium](#)

[Bair Hugger System Infographic \(PDF, 744 KB\)](#)



Forced-air warming in the laminar flow O.R.: A safe, effective warming tool

<sup>2</sup> Zink RS, Iaizzo PA. Conductive warming therapy does not increase the risk of wound contamination in the operating room. *Anesth Analg* 1993;76:50-3.

<sup>3</sup> Huang JK, Shah EF, Vinodkumar N, Hegarty MA, Greatorex RA. The Bair Hugger patient warming system in prolonged vascular surgery: an infection risk? *Crit Care* 2003;7:R13-R16.

<sup>4</sup> Moretti B, Larocca AM, et al. Active warming systems to maintain perioperative normothermia in hip replacement surgery: a therapeutic aid or a vector of infection? *J Hospital Infect* 2009;73:58-63.

<sup>5</sup> Memarzadeh F. Active warming systems to maintain perioperative normothermia in hip replacement surgery. *J Hosp Infect*. 2010; doi:10.1016/j.jhin.2010.02.006.

<sup>6</sup> Sessler DI, Olmsted RN, Kuehlmann R. Forced-Air Warming Does Not Worsen Air Quality in Laminar Flow Operating Rooms. *Anesth Analg*.113 (6): 1416-1421. 2011

<sup>7</sup> Olmsted RN, Kuehlmann R, Schlaumann B. Effect of Forced-Air Warming on Operating Theatre Air Quality: assessment using submicron particle release, Hospital Infection Society, 2010.

## 3M™ Bair Hugger™ System Recent News and Updates

[Court of Appeals affirms jury verdict for 3M, reverses summary judgment in pending federal cases](#)

[3M Responds to Latest Augustine Falsehoods \(404 KB\)](#)

[3M Scores Major Legal Victory in Bair Hugger Litigation](#)

[Competitor Continues With False, Misleading Statements \(208 KB\)](#)

[More than 400 Lawsuits Dismissed to Date \(201 KB\)](#)

[Federal Jury Rules in Favor of 3M \(170 KB\)](#)

[500 Cases Dismissed – All in Favor of 3M \(350 KB\)](#)

[Federal, state courts side with 3M on key damages motion \(424 KB\)](#)

[Know the Truth About the Oregon State Study \(328 KB\)](#)

[MN Court Grants Summary Judgment for 3M \(214 KB\)](#)

[Know the Truth About Augustine's Update \(389 KB\)](#)

[Know the Truth: The CDC, FDA & Forced-air Warming \(200 KB\)](#)

### 3M™ Bair Hugger™ System Videos



This video presents the findings of a study that shows the Bair Hugger Warming System did not disrupt clean operating room airflow patterns. By using a megasonic fog generator, researchers John P. Abraham, Ph.D., Professor of Thermal Sciences at the University of St. Thomas, and Jennifer A. Wagner, Ph.D., Prism Environmental Health and Safety Solutions, visualized operating room airflow patterns during a simulated hip replacement surgery both with and without warming from the Bair Hugger system. The megasonic fog generator emitted visible water vapor, which rode the airflow currents, thereby permitting visualization of the operating room airflow patterns. The downward flow of clean air - a common operating room feature - worked both with and without heat from the Bair Hugger warming system. In other words, the airflow patterns in the operating room looked the same both with and without heat from the Bair Hugger warming system. These findings confirm the results of a separate computational fluid dynamics study performed by Dr. Abraham, which is shown in a separate video. Both studies rebut claims from a competitor and a group of plaintiff attorneys that the warming system causes or increases the risk of surgical site infections by disrupting clean operating room airflow. Rather, in both studies, the Bair Hugger Patient Warming System did not disrupt clean operating room airflow and did not move air from the floor to the surgical site.



This video presents the findings of a scientific research project that shows the Bair Hugger Patient Warming System did not disrupt clean operating room airflow during a simulated hip replacement procedure. Using advanced mathematical calculations based upon the fundamental laws of physics, John P. Abraham, Ph.D., Professor of Thermal Sciences at the University of St. Thomas, found that air emerging from the Bair Hugger system did not disrupt the downward, clean operating room airflow that originates in the operating room ceiling, and did not move air from the floor to the surgical site. Dr. Abraham's findings are confirmed by a separate operating room airflow visualization study, which is shown in a separate video. Both studies rebut claims from a competitor and a group of plaintiff attorneys that the warming system causes or increases the risk of surgical site infections by disrupting clean operating room airflow. Rather, in both studies, the Bair Hugger Patient Warming System did not disrupt clean operating room airflow and did not move air from the floor to the surgical site. To view the full-length video, [click here](#).



The draping process starts by sealing the 3M™ Bair Hugger™ blanket to the chest with an adhesive strip. Excess air exhausts near the neck and shoulders and behind the surgical drape. Despite these and other safeguards, SSIs do occur for a variety of reasons. However, the Bair Hugger warming blanket is not the cause.

### Request your copy of the 3M™ Bair Hugger™ System Research Compendium

Researchers and independent bodies have studied the use of forced-air warming technologies in patient settings for many years. The 3M™ Bair Hugger™ System Research Compendium is a collection of more than 200 articles summarizing how forced-air warming supports patient care. To learn more about what rigorous, reliable science says about forced-air warming in patient settings, [click here](#).

#### We welcome your questions

CONTACT US

We know forced-air warming. We created the category. It's at the core of who we are and what we do. We have seen the benefits of 3M™ Bair Hugger™ system therapy at work for more than 28 years—and more importantly, clinicians across the globe have witnessed the contributions the Bair Hugger system makes to patient care. We have absolute confidence in the safety and efficacy of our products, as will anyone who has the complete story.

Questions? Please contact Bair Hugger Customer Service at 1-800-228-3957.

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